1-1-1963

An investigation of the differential effect between subjects classified as rigid and nonrigid by the self descriptive inventory.

William D. Chernets
University of Windsor

AN INVESTIGATION OF THE DIFFERENTIAL EFFECT BETWEEN SUBJECTS CLASSIFIED AS RIGID AND NONRIGID BY THE SELF DESCRIPTIVE INVENTORY

by

WILLIAM D. CHERNETS
B.A., Assumption University of Windsor, 1962

A Thesis
Submitted to the Faculty of Graduate Studies through the
Department of Psychology in Partial Fulfillment
of the Requirements for the Degree of
Master of Arts at Assumption
University of Windsor

Windsor, Ontario, Canada
1963

AAX5863

APPROVED BY:

R C. Peluso SJ

Sister Marian Dolores S.N.J.M.

Henry Hill OCD.

ABSTRACT

The present study was undertaken to investigate the ability of the Self Descriptive Inventory (SDI) to differentiate between rigid and nonrigid Ss. The Thematic Apperception Test (TAT) was used as an outside criterion of rigidity. A special scoring scheme was developed for the TAT in this study.

The SDI was administered to 332 high school students from which group 40 Ss, the 20 highest (rigid) and the 20 lowest (nonrigid) scorers, were selected; these Ss were given the TAT in two trials. On trial 1, all 40 Ss were asked to write stories to five TAT cards. On trial 2, half of the rigid and nonrigid Ss were asked to change their original stories; the remaining Ss were asked to reproduce their original stories.

Analysis of variance of the data indicated no statistically significant difference between the rigid and nonrigid Ss. Thus, by inference, the SDI failed to distinguish adequately the rigid Ss from the nonrigid Ss. However, the analysis did show that nonrigid Ss are capable of producing more responses than rigid Ss. The notion of disposition rigidity (Cattell, 1946ab) may tentatively explain the low productivity of the rigid Ss. Another explanation suggested by Schroder and Rotter (1952) is that rigid Ss have learned to behave in a consistent manner in most situations and therefore cannot see the possibility of other modes of action.

PREFACE

Considerable notions of rigidity interested the author to discover more about this topic.

The author's grateful appreciation is extended to Rev. R.C. Fehr, C.S.B., Ph.D., for his patience, direction, and encouragement. The author is indebted also to Dr. A.A. Smith, Ph.D. and to Mr. M. Starr, M.A., of the Psychology Department for their assistance in guiding him through intricate statistical analysis. Also he is grateful to Rev. D. Coughlin, C.S.B., who made it possible to test students at Assumption High School. He expresses his gratitude to the subjects who participated in his research. He is indebted to Sr. Marian Dolores, S.N.J.M., Ph.D., and to Rev. H.G. Hill, O.G.S., B.A., L.Th., M.A., for their assistance in the drafting of the final manuscript. Lastly, he wishes to thank Miss Vera Hladzuk for the many strenuous hours of typing.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Background of Related Research

Perseveration and rigidity have both been used in psychology to explain "inflexibility", or the inability to change or "bend" in a desired direction. Some investigators have looked upon rigidity as being a general pervasive factor. However, most of the data shows that rigidity is not a unitary but a multiform trait. Consequently there have been several attempts to discover in just what perseveration consists.

The term perseveration was first used in 1894 by Neisser to indicate a repetition or continuance of an activity after it had apparently ceased. Gross (1902, Pinard 1932a) systematized the study of perseveration in terms of primary and secondary functions. Gross defined the primary function as the intensity of any stimulus; and the secondary function as the duration of the response. From clinical observations and experiences he began to relate the functions to personality types. The importance of Gross's work lies in the fact that many experiments on rigidity have followed from his research.

In using a battery of tests to determine rigidity, an early experimentalist (Lankes, 1915) devised one of the tests

in the battery and according to his statistics this test has a fairly high positive correlation with the other tests in the experiment. He calls this specific test "Interrogatory on Perseveration". It consisted of a list of sentences to which the S responded with Yes, No, Very Much, or Never.

Lankes also thought that perseverators should write longer essays when they were given time to form a set. Their behavior in short performances which involved rapid change from one subject to another would not be as adequate as the behavior of non-perseverators in the same situation.

Perseveration has been defined as having an involuntary nature. One author quotes Jasper (1931) who says that perseveration "is the tendency of a set of neurons, once excited, to persist in the state of excitation, showing resistance to any change in this state" (Yates, 1961, p.44).

Rigidity is also described as a unit of personality structure that deals with the closeness of these units and is defined as

> that property of a functional boundary which prevents communication between neighboring regions. The degree of communication of region A with region B refers to the degree of influence of A on B or vice versa. Regions A and B are in communication to the degree to which a change of the state of A changes the state of B (Kounin, 1948, p.157).

The author continues: the definition of rigidity "was postulated as a functional property underlying behavior rather than as a descriptive concept referring to types of behavior" (Kounin, 1948, p.158).

A scale of rigidity (Braen, 1960a) was developed from the rigidity construct defined by Lewin and Kounin. Following their thought four item sets were developed: Homogeneity-Heterogeneity, Coherence-Incoherence, Deliberation-Impulsivity, and Externalization-Internalization. Rigidity was stated to be "a hypothetical boundary between inner-personal boundaries of the person" (Braen, 1960a, p.75).

Manifest rigidity, in his study, was defined as the score obtained on the Self Descriptive Inventory which consisted of items related to the four aforementioned sets. Braen states that the inventory given to a college population possessed suitable reliability and validity.

Cattell, in defining perseveration, distinguished between inertia of mental processes and disposition rigidity. The inertia of mental processes occurs when a person has to alternate between two previously practised motor tasks; disposition rigidity occurs when a familiar task performed in an accustomed fashion has to be performed in some new fashion. The same author states

> the factor of rigidity . . . is simply a relative inability to mold old habits, in one performance, to new ones . . . this means slowness of learning under the usual conditions of training . . . we shall assume that rigidity means a general slowness of learning (Cattell, 1946, p.256).

Studies that were performed to determine the relationship of rigidity with personality were mainly done with clinical groupings, e.g., manics, psychotics, etc. Pinard (1932a) related perseveration to neurotics. He carried out his experi-

ments with children and adults. The neurotics seemed to be extreme perseverators. Also, Pinard (1932b) attempted to relate rigidity to introversion. The result was that he found a tendency for the extreme perseverators to be effeminate, "nervous," sensitive, sentimental, shy and solitary, whereas the non-perseverators tended to be suspicious, inconsiderate, critical, impatient of criticism, tactless, silent, anxious, and in a state of general tension with ups and downs in mood.

In the light of the studies performed in relation to personality and rigidity however, "we must . . . conclude that the factors of perseveration are of little importance in defining differences between neurotics and normals, or between extroverts and introverts" (Yates, 1961; Eysenck, 1961, p.48).

One author found evidence for independent and relatively specific mental rigidity factors, such as adaptive flexibility and spontaneous flexibility. He describes adaptive flexibility as "the ability to change <u>set</u> in order to meet the requirements imposed by changing problems" (Guilford, 1957; Payne, 1961, p.238), the direction of the change being dictated by the situation or the problem to be solved; and spontaneous flexibility as "the ability to produce a diversity of ideas in a relatively unstructured situation" (Guilford, 1957; Payne, 1961, p.238), and it "appears to be a disposition to avoid repeating one's self" (Guilford, 1956, p.280).

Luchins (1951) devised the Einstellung tests to measure conceptual rigidity. The procedure consisted in giving Ss a series of problems all solvable by one method. These problems

are followed by a method which is relatively simple and more direct. These tasks refer to a tendency to repeat a solution in subsequent problems which are capable of solution by a simpler method.

In a survey of abnormalities of psychomotor functions, Brengelmann(1961) relates an experiment of group interaction (Conrad and Conrad, 1956). He stated that in his experiment a high score with the use of pronouns is associated with egocentric impulses or emphasis on communication. "The incidence of the first person pronoun (e.g., I, my, myself, mine, me) may mean more rigidity in shifting from the subjective point of view" (Brengelmann, 1961, p.61).

Scheier and Ferguson (1952), in a factorial study of rigidity, were concerned with inhibitory (negative transfer) effects upon tasks due to prior learning. Their analyses of the data showed that it is impossible to generalize about rigidity of non-motor behavior on the basis of motor rigidity.

A rigidity inventory consisting of 50 items was devised by Elizabeth L. Wesley (1953). Later, Zelen and Levitt (1954) selected 12 items from Elizabeth L. Wesley's original group items and constructed an inventory that was considered to be an adequate measure of rigidity.

The Thematic Apperception Test (TAT) has also been used in experiments of rigidity. Shatin (1958) related the Rorschach and TAT test along a 'constriction-dilation' continuum. Constriction meant

empty formalism, sterile or restricted fantasy,

> and lack of response . . . There is no spontaneity; the approach to the environment is diminished and is an impersonal one. Dilation . . . betokens vigorous associative energy, inner richness of experiences, and affective reactivity (Shatin, 1958, p.150).

The investigation showed that those who were constricted or dilated on the Rorschach were also constricted or dilated on the TAT.

Rigidity and authoritarianism have also been related. The TAT cards in a study by Brown (1953), were utilized to measure the need of achievement anxiety. In conjuntion with the TAT he employed the Einstellung problems and the California F Scale. The anxiety measured by the TAT arises when failure of achievement becomes immanent. The author concluded that "the rigidity which is associated with authoritarianism is a kind of defensive behavior which is perceived as warding off personal failure" (Brown, 1953, p.475).

In a summary of the experiments on rigidity, the author, (Sheila M. Chown, 1959), tried to assess the many works done. It is easy to see that rigidity is a flexible concept and as such, very difficult to define. The result has been many tests claiming to measure rigidity. Since this is the case, rigidity can only be defined operationally and must be explained and examined on the basis of the particular definition.

Philip (1958) endeavoured to investigate the relationship between perceptual rigidity and personality rigidity. A factor analysis of his results indicated that

> the main cluster, which included 13 laboratory tests

> and six of the personality traits, is here interpreted as measuring perceptual rigidity. Another cluster of three variables, tentatively labelled perseveration, is possibly linked to the main cluster (Philip, 1958, p.119).

Another author (Becker, 1954) successfully showed that perceptual and personality rigidity are related. Using the concept of rigidity defined by Cattell as the ease or difficulty with which old established patterns change, Becker found that Ss could be classified as rigid or nonrigid according to the time delay and the degree of distortion produced by the aniseikonic lenses. Also, seven predictors from the Rorschach proved to be significant as indicators of rigidity. Becker (1954, p.421-422) states that "the general hypothesis that the time delay and degree of distortion with aniseikonic lenses are meaningfully related to other measures of perceptual and personality rigidity is supported by the data".

In order to discover the relationship between emotional and perceptual rigidity, Else Frenkel-Brunswik (1949) examined the responses from perceptual tasks of children who were classified as prejudiced and not prejudiced. Although her study is not conclusive, there was a tendency for prejudiced children, those who could not tolerate perceptual ambiguity, to be more rigid in cognitive, social, and emotional attitudes than were non-prejudiced children who could tolerate perceptual ambiguity. Her tentative hypothesis was that ethnically prejudiced children would be more intolerant to perceptual ambiguity and thus more rigid in their personality structure than were non-prejudiced children.

Purpose of the Present Research

At present there are many definitions of rigidity. Basically, the notion of rigidity presented by many experimenters is that once behavior patterns become organized with prior experiences, there is an interference when a demand is made upon the organism to reorganize or change the original behavior pattern. Up to this time the validity of inventory tests measuring this basic concept of rigidity has yet to be established. It is the purpose of this study to extend the experimentation with inventory tests of rigidity by employing the Self Descriptive Inventory of Braen (1960b). In this investigation then, the SDI will be compared with an external criterion of rigidity, namely, TAT stories which will be scored according to a new rigidity scale. This scale will be based on the notion of rigidity stated above, i.e., the ability to change original verbal behavior patterns.

Thus, in effect, the experiment will be concerned with the ability of the Self Descriptive Inventory to discriminate Ss as rigid or nonrigid along a rigidity continuum.

CHAPTER II

METHODOLOGY AND PROCEDURE

The main purpose of this study was to investigate the ability of the Self Descriptive Inventory (SDI) to discriminate Ss as rigid or nonrigid along a rigidity continuum and to relate its discriminative power with another measure of rigidity, viz., the TAT stories. First, this chapter will discuss the experimental sample selected. Second, the psychometric instruments employed will be explained. Third, the experimental procedure will be discussed. And finally, statistical analysis will be mentioned.

Experimental Sample

The experimental sample consisted of 40 male high school students. They were chosen from grades eleven and twelve and they ranged in age from 15 years three months, to 18 years eight months. It was assumed that they had the same academic background.

The 40 Ss were selected on the basis of the SDI (Braen, 1960b). The inventory was administered to 332 students. Eighteen of these were rejected on the basis of the criterion for rejection: five or more 'lie' scores which are included in the SDI. From the remaining 314 Ss, the top twenty Ss were classified as "rigid" and the bottom twenty as "nonrigid".

The scores of the rigid group ranged from 39 to 48; the scores for the nonrigid group ranged from 14 to 21. These extremes of the population were chosen to represent best the characteristics being investigated. The means, standard deviations, and t ratio for the two groups (rigid and nonrigid) are indicated in Table 1. Note that there is a significant difference between the two groups.

Table 1

Mean, Standard Deviation, and t Ratio

for the Rigid and Nonrigid Groups

	M	S.D.	t
Nonrigid	17.45	2.06	
Rigid	41.35	2.51	86.28**

* $t_{.05} = 2.021$

** $t_{.01} = 2.704$

Psychometric Measurements

The Self Descriptive Inventory

The Self Descriptive Inventory consists of four item sets labelled Homogeneity-Heterogeneity (Hom.-Het.), Coherence-Incoherence (Coh.-Inc.), Deliberation-Impulsivity (Del.-Imp.), and Externalization-Internalization (Ext.-Int.). Each item set consists of items keyed true or false, the total number of items for the SDI being 49.

Braen postulated that in the Hom.-Het. set, the rigid Ss

would tend to mark Hom. items as true and the Het. items as false. Traits inferred from the items labelled Hom. were "fixation, endurance, persistence, and consistency" (Braen, 1960a, p.76).

Of the second item set, Coh.-Inc., Braen postulated that the rigid Ss would mark Coh. items as true and Inc. items as false. Traits inferred from the items labelled Coh. were "coordination, organization, and coherence" (Braen, 1960a, p.77).

In the third set, Del.-Imp., Braen postulated that the rigid Ss would mark Del. items as true. Traits inferred from the items labelled Del. were "inhibition, reflection, and hesitation" (Braen, 1960a, p.77).

For the last set, Ext.-Int., Braen postulated that the rigid Ss would mark the Ext. items as true. Traits of "specificity, objectivity, concreteness, and a time perspective emphasizing the present" (Braen, 1960a, p.77) were inferred from the items labelled Ext.

Two separate analyses were performed, and two criteria were used for both analyses. Criterion one was that a biserial correlation coefficient between each item and the total score must be at least .20. For the second criterion each item had to be answered in the keyed direction of True or False by between 25 and 75 per cent of the Ss.

Odd-even reliability for two samples of university students was .80 and .86. In a study of high school students Braen (1960b) found that the reliability for high school stu-

dents was significantly lower than for university students.

To validate the SDI Braen (1960a) correlated it with the Personal Preference Schedule (PPS) constructed by Edwards and the Consistency Scale (CS) which is incorporated in the PPS. The PPS and CS were chosen because Braen thought that the theory behind the construction of these tests is close to the rigidity construct postulated in the SDI. Construct validity and internal consistency were fairly well established. However, empirical validity has not been established. (Braen, 1960b).

A total of 100 psychology students at Syracuse University were used in the validation study. After data had been gathered, a Pearson product-moment correlation coefficient of .62 was found between the PPS and SDI, .02 between SDI and CS, and .11 between PPS and CS. The correlation of .62 supported the hypothesis that there would be a significant positive correlation between the SDI and the PPS.

Braen (1960b) also administered his rigidity inventory to 283 high school students. He compared their results with those of the college population. He found that for high school students the rigidity inventory was not as reliable as for the previous college sample. In this second study he also utilized the Wesley Scale which is concerned with manifest rigidity (Braen, 1960b). Braen (1960b) states that Moldawsky and Katz, in separate unpublished doctoral dissertations, are dubious of the empirical validity of the Wesley Scale of rigidity. The Wesley Scale plus nine lie items, and the SDI com-

prised a total of 70 items, the composition of the new SDI given to the high school sample. In his previous paper, Braen (1960a) made no mention that the Wesley Scale had been utilized in the construction of the rigidity inventory. However, in his study with high school students, the Wesley Scale and nine lie items were incorporated into the SDI.

In the second study, Braen (1960b) found that the Wesley Scale and the item sets Hom.-Het., Coh.-Inc., and Del.-Imp. of the SDI measured the same aspects of rigidity. He also found that the high school Ss were less "rigid" than the university Ss.

Manifest rigidity, when referred to the SDI, simply means the total score of a subject. For example, Ss with low scores have less manifest rigidity and are called nonrigid, while Ss with high scores have more manifest rigidity and are called rigid.

In summary, there is no empirical validity for the 49 items of the SDI. Satisfactory results were obtained when construct validity and internal consistency were investigated. The SDI plus the Wesley Scale, plus nine lie items is not as reliable for high school students as for university students.

The main purpose of this research was to investigate the effectiveness of the SDI as an indicator of rigidity. Since the inventory did not show a high retest reliability for Braen's high school population, a secondary part of the research was designed to test this reliability of the SDI with this new sample of high school students.

The Thematic Apperception Test

The Thematic Apperception Test (TAT) was devised by Morgan and Murray in 1935. In the previous chapter it was shown that the TAT has been used as a measure of rigidity. It was employed in the present study as another estimate of rigidity. The TAT consists of 31 pictures to which an individual tells a story. As the title suggests, the test centers on the theme expressed and on the individual's perception of the card. When a person is asked to write a story to a TAT card, there is an underlying 'motif' upon which the individual elaborates. Apperception refers to the manner in which the individual views or experiences the story. For example, on card one, there is a picture of a boy sitting down with a violin in front of him. Some people see him as sad, others as happy. The manner of their perception is colored by their subjective experiences. The difference in apperception between those Ss who see him as happy, or as sad, is one of degree. A distorted response would be indicated by the description 'a boy standing beside a lake'.

Fundamentally, the TAT is recognized as a projective test. As such, its function is to discover the basic dynamics at work within a person. It is more structured than the Rorschach ink blots and has the potentiality of subtlely abstracting information. Often the person is not aware that he is revealing himself when he makes up stories about the people in the pictures. The underlying assumption is that the person's responses indicate patterns of personality characteristics.

Two different kinds of reliability may be considered with respect to the TAT. First, scorer reliability, i.e., how consistent would two or more raters be in scoring a TAT protocol. Tomkins (1947, p.4) shows that the investigators are themselves inconsistent. Their reliability coefficients range from .30 to .96.

Second, there is test-retest reliability, i.e., how consistent for one person are the stories elicited from card to card over a period of time. With a person classified as having low rigidity, the literature indicates a low test-retest reliability of .46 (Tomkins, 1947, p.7). With a person of high or marked rigidity a high reliability coefficient of .91 was reported (Tomkins, 1947, p.8). This means that an individual who is rigid tends to produce the same stories to the same cards over a period of time. For this reason, the content of the TAT stories seemed to be appropriate measures of rigidity for this research. The TAT stories were used to serve as an outside criterion of rigidity.

The TAT cards 2, 3BM, 4, 6BM, 7BM were chosen for presentation since Dana (1951, 1957) states that these compose the basic life situations for males. Also, when literature pertinent to the present study was read, a frequency count showed that these five cards were those most used by the investigators. Appendix B contains a description of these five cards.

To the question of validity, Tomkins (1947) showed that there is an agreement between the TAT and other materials, such as autobiographical material, dreams, the Rorschach, psy-

chosnalysis, individual case studies, and clinically diagnosed groups. However, no statistical information was indicated. Clinical groups have been differentiated by the TAT (Tomkins, 1947, p.15).

Word Fluency Test

The Word Fluency Test was taken from the Mental Abilities Test. For the Word Fluency Test the Ss are asked to write as many words as they can that begin with the letter 'S'. There is a time limit of five minutes.

A New Readability Yardstick

In order to arrive at an index of measurement, other scoring schemes were examined (Bell, 1951; McClelland and Liberman, 1949; Rosenzweig and Edith E. Fleming, 1949; Sanford, 1942; Shatin, 1955; Zatzkis, 1949). The factor common to the above cited studies is that the authors had endeavored to analyze verbal behavior. All of them, except Rosenzweig and Edith E. Fleming (1949), use grammatical parts of speech in their analysis. Rosenzweig and Edith E. Fleming tried to analyze the manifest content of TAT stories into a) figures, b) objects, c) problems and outcomes. The procedure they described was followed but there was too much variability on the cards selected to make the analysis feasible. Thus a new scoring scheme was devised modelling itself on the research of Flesch.

The Readability Yardstick, developed by Flesch (1948), presented a method of objectively scoring the manifest content of the stories told to the TAT. A study (Patricia M. Hayes,

Jenkins, and Walker, 1950) shows that the Flesch scale is objective and fairly reliable. The original Readability Yardstick proved cumbersome. In order to analyze a passage, it was necessary:

1) to find the average sentence length in words;

2) to find the average word length in syllables;

3) to find the average percentage of 'Personal Words'; and

4) to find the average percentage of 'Personal Sentences'.

These scores were then applied to a formula for readability and a formula for human interest.

Later the Readability Yardstick was simplified (Farr, Jenking, and Paterson, 1952). It was less cumbersome than the original measurement but was still time consuming. The number of syllables per one hundred words, average sentence length, and the number of one syllable words per one hundred words were required.

From his research on the Readability Yardstick, Flesch (1950) endeavored to measure the level of abstraction from a sample of writing. He states that definite words are related to concreteness, indefinite words to abstraction. The formula for obtaining the level of abstraction was cumbersome and long.

Scoring Scheme

The scoring scheme for this study took into account four categories of words: nouns, verbs, adjectives, and adverbs. The manifest content of the stories was analyzed and the words were put in their respective groupings. Adapting the Flesch

Readability Yardstick, the rules of the scoring procedure are as follows:

1. Nouns, verbs, adjectives, and adverbs were written on separate sheets of paper and placed in their respective categories. (see Appendix A)

2. Similar words were underlined. These words denote the amount of similarity of content in the stories.

3. Words not underlined denote the amount of change.

4. Singulars and plurals of a word were considered the same, e.g., field and fields.

5. Where words have the same meanings, such as pistol and gun, they are considered similar and are checked off as similar words.

6. In the case where a noun is used in the genitive case, it is reversed and scored accordingly, e.g., the farmer's wife, change to the wife of the farmer.

7. If a word appeared more than once, it was scored as one response.

8. The case and tense of verbs were changed to the infinitive form. All infinitives were scored as verbs.

9. The copula verb 'to be' was not subjected to analysis, and was not scored.

10. Pronouns were not scored because there are so few of them.

11. Words in brackets were excluded because they were usually just comments or an identification of a person in the pic-

ture, e.g., the person on the left or the person on the right.

12. If a sentence in the story is not finished and expresses no logical thought, this sentence is discarded. If the sentence is not completed and expresses a logical thought, only the words up to the end of the thought are scored.

13. When there was doubt concerning the category to which a word belonged, Webster's New World Dictionary, College Edition, was used.

The words from each category for both trials were summed to obtain the total responses. The words from each story not underlined were summed and noted as the total change. The ratio of total responses to total change was computed to obtain the total percentage of change. Only the first two cards (2, 3BM) were scored due to the factor of time involved.

Experimental Procedure

The main purpose of this research is to investigate the adequacy of the SDI as a measure of rigidity. Therefore, the SDI was administered to 332 students. From this sample, 40 Ss were chosen and were given the TAT.

On trial one, 40 Ss were asked to write stories to the five TAT cards. These were the instructions given:

> I am going to show you some pictures one at a time; I want you to make up a story about each picture. Tell me what led up to the event shown in the picture, what is happening at the moment, and what the outcome is likely to be. Each story should have a beginning, a middle, and an end. There is a maximum of six minutes for each story. Take your time; this is not a test of speed.

The pictures were flashed onto a screen and exposed for the time limit of six minutes while the Ss wrote on paper which was given to them.

One week later, for the second trial, the 40 Ss were divided into two classes of rigid Ss and nonrigid Ss on the basis of their SDI scores. The rigid Ss were further partitioned into group A and group B; the nonrigid Ss into group C and group D. Half of the rigid Ss (group A) and half of the nonrigid Ss (group C) were asked to reproduce their original stories. Also, half of the rigid Ss (group B) and half of the nonrigid Ss (group D) were asked to change their stories.

The instructions for groups A and C on trial two are the following:

> The stories you wrote one week ago were very well done! I am going to show you the same pictures again and this time I would like to see how accurately you can reproduce your original stories. Again tell me what led up to the event shown in the picture, what is happening at the moment, and what the outcome is likely to be. Each story should have a beginning, a middle, and an end. There is a maximum of six minutes for each story so do not rush.

The instructions for groups B and D on trial two are the following:

> The stories you wrote one week ago were good! Many people view these pictures in different ways. Now I want to see if you can view the pictures in a different way, and if you can write different stories to them. Each story should have a beginning, a middle, and an end. Try and tell what led up to the event shown in the picture, what is happening at the moment, and what the outcome will be. Try and write a story different to the one you

wrote last week. There is a maximum of six minutes for each story, so do not rush.

There were two periods of testing. The second period was necessary for six of the original Ss were rejected. The criteria for rejection after trial one were: a) more than one story not written; b) S did not appear for second trial. The same instructions and time periods apply to the second testing period as to the first.

At the conclusion of the second testing period, the SDI was readministered to the 40 participants to test for reliability. These results are given in Chapter IV.

Statistical Analysis

The main analysis of total responses and the secondary analysis of total percentage of change, performed by means of a type III analysis of variance design explained by Lindquist (1950), are concerned with the ability of the SDI to measure rigidity. Separate analyses of card 2 and card 3BM followed the analysis of variance design found in McNemar (1955, p.298). The t ratios were also computed by the formula found in McNemar (1955, p.109).

CHAPTER III

PRESENTATION AND ANALYSIS OF RESULTS

The primary aim of the present study was to investigate the ability of the SDI to differentiate between Ss classified as rigid and nonrigid utilizing the TAT as an outside criterion. In the present chapter, the main analysis is divided into six sections. The first will deal with the results of a Lindquist type III analysis of variance design. The second will deal with t ratios for the Lindquist type III design. The third will present a complex analysis of variance (McNemar, 1955) for productivity to TAT card 2. The fourth section will indicate t ratios for analysis of variance of a total response to TAT card 2. The fifth will present a complex analysis of variance for productivity to card 3BM. Finally, means, standard deviations, and t ratios will be presented for card 2, card 3BM, and card 2 and card 3BM combined.

A supplementary analysis comprises the remainder of this chapter. The first part of the supplementary analysis consists of a Lindquist type III analysis of variance design for percentage of change of total responses. Then t ratios for the aforementioned type III design are presented. Mean, standard deviation and t ratios for the Word Fluency Test are indicated. And finally, test-retest reliabilities for the SDI are shown.

Table 2

Analysis of Variance of Total Responses
Between Rigid and Nonrigid Ss for the TAT Cards 2 and 3BM

SS	Source	Sum of Squares	df	Variance Estimate	F
SSb_s	Between Subjects	23730.49	39		
SSr	Effect of Instructions	32.51	1	32.51	.06
SSc	Difference between Rigids & Nonrigids	1162.81	1	1162.81	2.16
SSrc	Interaction: the effect of instructions upon groups	3187.82	1	3187.82	5.93*
SSe(b)	Error	19347.35	36	537.43	
SSws	Within Subjects	5972.5	40		
SSb	Effect of the cards	145.51	1	145.51	.99
SSrb	Effect of instructions on the cards	70.37	1	70.37	.48
SSbc	Difference between groups on the cards	394.62	1	394.62	.48
SSrbc	Interaction: effect of groups by instructions by cards	76.05	1	76.05	.51
SSe(w)	Error	5285.95	36	146.83	
SST	Total	29702.99	79		

* $F_{.05} = 4.08$
** $F_{.01} = 7.31$

Main Analysis

Lindquist Type III Design for Total Responses

Table 2 presents the analysis of variance for the effects of the groups, cards, and instructions. As can be seen there is a significant difference between the instructions and the groups (SSrc). There was no significant difference between the two groups (SSc). No other significant differences were found.

t Ratios for the Lindquist Type III Design

To aid investigation of the significant interaction found in Table 2, t ratios were computed for the type III design. Table 3 is a presentation of these results. No significant differences were found between the instructions and the two TAT cards. However, there was a differential effect between the rigid Ss (R) and the nonrigid Ss (NR) in the way they reacted to instructions not to change (instr.I_1). No significant difference was established between the groups and the way they reacted to the instructions to change (instr.I_2). A differential effect was indicated among the rigid Ss in the way in which they responded to instructions. A difference in the manner of response to the instructions was also found among the nonrigid Ss. The nonrigid Ss under instructions not to change differed from the rigid Ss who were asked to change. However, no difference was found between the rigid Ss who were asked to reproduce their stories and the nonrigid Ss who were asked to change their stories.

Two other differential effects were found. One was between the way the two groups reacted to TAT card 2; the other was a difference between the way the rigid Ss reacted to card 2 and the way the nonrigid Ss reacted to TAT card 3BM.

Table 3

t Ratio for the Lindquist Type III Analysis of Variance Design of Total Response for Rigid and Nonrigid Ss

Cells	t
R & NR; instr.I_1	4.89**
R & NR; instr.I_2	1.21
Diff. among R following I_1, & I_2	2.74**
Diff. among NR following I_1, & I_2	3.35**
Diff. between R; instr.I_1 & NR; instr.I_2	1.53
Diff. between NR; instr.I_1 and R; instr.I_2	2.15*
Diff. between R & NR on card 2	2.91**
Diff. between R & NR on card 3BM	.77
Diff. among R on both cards	1.73
Diff. among NR on both cards	.41
Diff. between R on card 2 and NR on card 3BM	2.50*
Diff. between NR on card 2 and R on card 3BM	1.18
Diff. between card 2 & card 3BM with respect to I_1	.24
Diff. between card 2 & card 3BM with respect to I_2	1.05
Diff. between I_1 & I_2 on card 2	.67
Diff. between I_1 & I_2 on card 3BM	.09
Diff. between I_1 on card 2 & I_2 on card 3BM	.34
Diff. between I_1 on card 3BM & I_2 on card 2	.96

* $t_{.04} = 2.021$
** $t_{.01} = 2.704$

Analysis of Variance of Total Responses for TAT Card 2

The analysis of variance, presented in Table 4, shows two differential effects. There is a significant difference between the rigid and nonrigid groups (SSc) in terms of their total responses. A significant interaction between the instructions and the two groups was also found (SSrc). As can be seen there was no difference between the two sets of instructions indicating that Ss did not follow the instructions that they were given.

Table 4

Analysis of Variance for Total Responses on TAT Card 2 for the Rigid and Nonrigid Ss

SS	Source	Sum of Squares	df	Variance Estimate	F
SSr	Effect of Instructions	87.02	1	87.02	.34
SSc	Difference between groups	1452.02	1	1452.02	5.70*
SSrc	Interaction: instructions by groups	2175.63	1	2175.63	8.54**
SSw	Error	9170.7	36	254.74	
SST	Total	12885.37	39		

* $F_{.05} = 4.08$
** $F_{.01} = 7.31$

t Ratios for Analysis of Variance to Card 2 for Total Responses

Table 5 indicates the results of t ratios for analysis of variance of total responses for both groups for card 2. There is a significant difference between rigid Ss and nonrigid Ss in the manner in which they respond to instructions not to change. A significant difference is indicated among the nonrigid Ss. Finally, the table indicates a difference between the rigid Ss who were asked to change and the nonrigid Ss who were asked not to change.

Table 5

t Ratio for Analysis of Variance to TAT Card 2 for Total Responses to Instructions for Rigid Ss and Nonrigid Ss

Subjects	Instructions	Mean	t
Rigid	No change	54.7	
Nonrigid	No change	81.5	3.77**
Rigid	Change	66.5	
Nonrigid	Change	63.8	.38
Rigid	No change	54.7	
Rigid	Change	66.5	1.66
Nonrigid	No change	81.5	
Nonrigid	Change	63.8	2.49*
Rigid	No change	54.7	
Nonrigid	Change	63.8	1.28
Rigid	Change	66.5	
Nonrigid	No change	81.5	2.11*

* $t_{.05} = 2.101$
** $t_{.01} = 2.878$

Analysis of Variance of Productivity for TAT Card 3BM

The results of the analysis are presented in Table 6. There are no differential effects indicated.

Table 6

Analysis of Variance for Total Responses to TAT Card 3BM for Rigid and Nonrigid Groups

SS	Source	Sum of Squares	df	Variance Estimate	F
SSr	Effect of instructions	1.60	1	1.60	.003
SSc	Difference between groups	102.40	1	102.40	.24
SSrc	Interactions: instructions by groups	1102.50	1	1102.50	2.57
SSw	Error	15462.6	36	429.52	
SST	Total	16669.10	39		

* F.05 = 4.08
** F.01 = 7.31

Mean, Standard Deviation, and t Ratio for Total Responses to Card 2

The smallest and largest standard deviation in Table 7 is with the nonrigid groups. They appear to be more variable than the rigid Ss. A differential effect was found among the two groups showing that the Ss followed instructions. Also, there is a difference between the two groups when they followed

Table 7

Mean, Standard Deviation, and t Ratio for Total Responses to TAT Card 2

Subjects	Instructions	Mean	S.D.	t
Rigid	No change	54.7	12.76	
Nonrigid	No change	81.5	21.58	4.54**
Rigid	Change	66.5	12.04	
Nonrigid	Change	63.8	11.96	.67
Rigid	No change	54.7	12.76	
Rigid	Change	66.5	12.04	2.85*
Nonrigid	No change	81.5	21.58	
Nonrigid	Change	63.8	11.96	3.05**

* t.05 = 2.101
** t.01 = 2.878

Table 8

Mean, Standard Deviation, and t Ratio for Total Responses to TAT Card 3BM

Subjects	Instructions	Mean	S.D.	t
Rigid	No change	62.3	17.65	
Nonrigid	No change	76.0	20.54	2.15*
Rigid	Change	73.2	24.40	
Nonrigid	Change	65.9	14.74	1.08
Rigid	No change	62.3	27.65	
Rigid	Change	73.2	24.40	1.54
Nonrigid	No change	76.0	20.54	
Nonrigid	Change	65.9	14.74	1.69

* t.05 = 2.101
** t.01 = 2.878

instructions not to change. But no difference was found between the two groups when they were asked to change.

Means, Standard Deviation, and t Ratio for Total Responses to Card 3BM

In Table 8 there is only one differential effect indicated between the rigid Ss and the nonrigid Ss in the way they followed instructions not to change. The mean and standard deviation of the nonrigid Ss are larger than for the rigid Ss.

Table 9

Mean, Standard Deviation, and t Ratio for Total Responses to TAT Cards 2 & 3BM for Rigid and Nonrigid Ss

Subjects	Instructions	Mean	S.D.	t
Rigid	No change	58.50	15.86	
Nonrigid	No change	78.75	21.25	3.24**
Rigid	Change	69.85	19.53	
Nonrigid	Change	64.85	13.46	.89
Rigid	No change	58.50	15.86	
Rigid	Change	69.85	19.53	1.91
Nonrigid	No change	78.75	21.25	
Nonrigid	Change	64.85	13.46	2.34*

* t.05 = 2.101
** t.01 = 2.878

Mean, Standard Deviation, and t Ratio for Card 2 and Card 3BM

When the two cards were combined, the means and standard deviations, and t ratios were computed. The results appear in Table 9. The purpose of combining the cards was to find

out if there was a differential effect between the two groups when they were given the same instructions, i.e., not to change or to change their stories. Also, in combining the results of the two cards, the particular card is not considered and the emphasis is then placed upon the two groups and the two sets of instructions. In Table 9 there is a difference between the two groups and the manner in which they behave to the instructions not to change (Rigid - No change, Nonrigid - No change). This effect can also be seen in Tables 7 and 8. There also is a statistical significant difference in the way the nonrigid Ss behave to the two sets of instructions (Nonrigid - No change, Nonrigid - Change). As in Table 8 the nonrigid Ss have the largest and smallest standard deviation with respect to the number of responses.

Supplementary Analysis

Part I. - Lindquist Type III Design for Percentage of Change of Total Responses

The results of the Lindquist type III analysis of variance design are presented in Table 10. The instructions (SSr) show a difference between Ss who were asked to change and those who were asked not to change. There is also a difference in amount of change between card 2 and card 3BM (SSb). A differential effect between the instructions and the cards (SSrb) was also found. Again, as in Table 2, there was no significant difference between the rigid Ss and the nonrigid Ss (SSc).

Table 10

Analysis of Variance for Percentage of Change of Total Responses for Rigid and Nonrigid Subjects Using TAT Cards 2 and 3BM

SS	Source	Sum of Squares	df	Variance Estimate	F
SSbs	Between Subjects	17487.20	39		
SSr	Effect of instructions	8904.20	1	8904.20	38.24**
SSc	Difference between Rigids & Nonrigids	198.20	1	198.20	.85
SSrc	Interaction: the effect of instructions upon groups	2.45	1	2.45	.01
SSe(b)	Error	8382.35	36	232.84	
SSws	Within Subjects	2901.00	40		
SSb	Effect of the cards	432.45	1	432.45	7.89**
SSrb	Effect of instructions on cards	490.05	1	490.05	8.94**
SSbc	Difference between groups on cards	.80	1	.80	.01
SSrbc	Interaction: effect of groups by cards by instructions	5.00	1	5.00	.09
SSe(w)	Error	1972.70	36	54.79	
SST	Total	20388.20	79		

* $F_{.05} = 4.08$
** $F_{.01} = 7.31$

Table 11

t Ratio for the Lindquist Type III Design for Percentage of Change of Response on Cards 2 & 3BM for Rigid and Nonrigid Subjects

Cells	t
Diff. between groups following I_1	1.30
Diff. between groups following I_2	1.04
Diff. among R following I_1 and I_2	8.04**
Diff. among NR following I_1 and I_2	7.74**
Diff. between R following I_1 and NR following I_2	9.05**
Diff. between NR following I_1 and R following I_2	6.69**
Diff. between card 2 and card 3BM under I_1	3.58**
Diff. between card 2 and card 3BM under I_2	.11
Diff. between I_1 and I_2 on Card 2	9.72**
Diff. between I_1 and I_2 on Card 3BM	6.03**
Diff. between I_1 on Card 2 and I_2 on Card 3BM	9.61**
Diff. between I_1 on Card 3BM and I_2 on Card 2	6.14**
Diff. between R and NR on Card 2	1.10
Diff. between R and NR on Card 3BM	1.25
Diff. between R on Card 2 and Card 3BM	1.66
Diff. between NR on Card 2 and Card 3BM	1.81
Diff. between R on Card 2 and NR on Card 3BM	2.91**
Diff. between NR on Card 2 and R on Card 3BM	.56

* $t_{.05} = 2.021$
** $t_{.01} = 2.704$

Part 2. - t Ratio for the Lindquist Type III Design

Table 11 indicates several significant t ratios. However, in terms of percentage of change, there is no difference between the rigid and nonrigid groups and the way they follow

the instructions. There is a significant difference between the rigid Ss who followed directions not to change (I_1) and to change (I_2). Also, there is a significant difference between the nonrigid Ss and the manner in which they responded to instructions not to change (I_1) and to change (I_2). A differential effect was observed between the rigid Ss who followed instructions not to change (I_1) and the nonrigid Ss who followed instructions to change (I_2). There was a differential effect between nonrigid Ss asked to reproduce their stories (I_1) and rigid Ss asked to change their stories (I_2). A difference in instructions not to change was noted between card 2 and card 3BM for the two groups. The Ss responded differently to the two sets of instructions (I_1, and I_2) on card 2 and on card 3BM.

Table 12

Mean, Standard Deviation, and t Ratio for Rigid and Nonrigid Subjects on the Word Fluency Test

Subjects	Mean	S.D.	t
Rigid	38.65	8.14	
Nonrigid	40.68	6.45	.84

* t.05 = 1.994

** t.01 = 2.638

Part 3. - The Word Fluency Test

Table 12 indicates that there is no significant differ-

ence in productivity between the rigid and nonrigid Ss on the Word Fluency Test.

Part 4. - Test-retest Reliability Coefficient

As can be seen in Table 13, there is a significant difference between the high school sample used by Braen (1960b) and the high school sample used in the present research.

Table 13

Retest Reliabilities for the SDI

Group	r	z	t
High School Ss of Braen	.67	.811	
High School Ss in present study	.84	1.221	12.21**

* t.05 = 1.96

** t.01 = 2.57

CHAPTER IV

DISCUSSION OF RESULTS

The present research was primarily concerned with the Self Descriptive Inventory and its ability to differentiate Ss as rigid and nonrigid. The first part of this chapter presents the main analysis which consisted of a Lindquist type III analysis of variance of total responses for TAT card 2 and card 3BM for Ss classified as rigid and nonrigid by the SDI. The second part of this chapter is concerned with a secondary analysis which dealt with an analysis of the percentage of change for rigid and nonrigid Ss in each TAT card. Also, the Word Fluency Test and the reliability coefficient of the present sample will be discussed.

Main Analysis

According to Table 2, there was no significant difference between the rigid and nonrigid Ss indicating that the hypothesis that the SDI can differentiate rigid from nonrigid Ss has not been substantiated. Two explanations may be given for this. First, the SDI itself may measure a type of rigidity specifically different from the measure of rigidity obtained by the use of the TAT in this study. Philip, Fehr, and Smith (1960) employed the SDI with a college population in order to classify Ss as rigid or nonrigid and the two groups were given

a battery of perceptual tests. When the data were subjected to analysis, no significant difference was found between the Ss classified as rigid or nonrigid on the basis of their scores on the SDI. The SDI did not distinguish the two groups. Thus, in the study cited, the SDI proved inadequate as a measure of perceptual rigidity. In this study, the SDI also failed as a measure of rigidity operationally defined for this investigation. Second, the scoring scheme for the TAT used in the present study may not have been adequate and/or sensitive enough to discriminate the rigid and nonrigid Ss.

In this investigation, as indicated by Table 7 and Table 8, the rigid Ss compared with the nonrigid Ss are significantly less productive in their responses to the two TAT cards. The aforementioned two tables also show that on trial one the nonrigid Ss produced significantly more responses to the two TAT cards than did the rigid Ss. Utilizing the definition of structural rigidity given by Cattell and Tiner (1949), the following tentative hypothesis may be given. The rigid Ss confronted with a new situation fail to behave in a new manner. Instead of expanding and producing new responses they tend to display old, safe and sure methods of responding. Thus, as indicated in Table 5, their number of total responses on the first trial to TAT card 2 under instructions not to change is significantly lower than that of the nonrigid Ss who followed the same instructions. Again Table 5 indicates that when the rigid Ss were asked to change their stories, they were not significantly more productive than the rigid Ss who were asked not

to change. The same table indicates that the rigid Ss instructed to change tended to produce more, but they were still as constricted in their productivity as the rigid Ss who were asked not to change.

Cattell and Tiner (1949, p.337) state that "there are now sufficient studies to suggest that the total variance in the usual battery of tests for classical disposition rigidity will usually parcel itself out . . . into . . . a factor of insuggestibility to authority . . .". There is, then, the possibility that the rigid Ss are unable to follow instructions adequately. Perhaps they have a need to rely upon factors which give them security and when they are instructed to do something which may interrupt these factors, the rigid Ss are less receptive to the suggestion. Thus as in Table 9, when the rigid Ss were asked to change, they did not fulfill the instructions.

When the nonrigid Ss were asked to write stories they produced significantly more responses, as indicated by Table 5, than the rigid Ss. The stories of the nonrigid Ss were seen to be more spontaneously flexible and these Ss were freer to produce a diversity of ideas than were the rigid Ss. But, as can be seen in Table 5, when they were asked to change their stories, the nonrigid Ss produced less responses than the rigid Ss. Their behavior for instructions to change was opposite to the behavior of the rigid Ss under these same instructions. Since the nonrigid Ss had initially written lengthy stories, it would be difficult to expand and produce more. Consequent-

ly, when told to change, they contracted their stories, and decreased the number of total responses.

An explanation by Schroder and Rotter (1952) resembles what has already been mentioned. The rigid Ss apparently respond to situations in a consistent manner. Rigidity "is a failure to learn something rather than an inherent or original trait" (Schroder and Rotter, 1952, p.142). The results of the present research seem to support this concept postulated by Schroder and Rotter. As in their experiment, rigidity in the present study appeared to be single-solution learning, that is, when a rigid person is in a situation and a method of behavior is reinforced he will tend to use this behavior at all times. The present results, as in the aforementioned study, seem to indicate that the rigid S has one solution, one mode of behavior which he assumes to be correct and thus this solution remains the same in all situations. Since he does not grasp other solutions, he does not expect or look for change in a situation.

It is suggested, as a possible explanation, that in the present investigation, the rigid Ss approached the situation with restricted attention. Their method of behaving reinforced them not to change and thus they did not perceive alternative modes of behavior. When they were presented with TAT card 2, they reacted in this situation as they would in any other situation, that is, they relied upon a set pattern of behavior. On trial 1, the cards were novel stimuli and

they were asked to write stories to them. On trial 2, they were asked to change their stories and the tendency of the rigid Ss to change may be due to the fact that the TAT cards are no longer novel stimuli and there is not that much reinforcement for them to act in the same consistent manner as they previously did. They were more acquainted with the stimuli and instead of relying upon a single mode of behavior, they could choose alternative modes. But, as can be seen in Table 5, their behavior was not significantly different from the rigid Ss who were asked to change.

Under instructions to change, the nonrigid Ss produced less responses than the nonrigid Ss asked not to change according to Table 5. An explanation for this may be that in a novel situation, as on trial 1, there are many cues and alternate ways of behavior as indicated by their responses. However on trial 2, the situation is not as novel because the Ss are acquainted with the cards. Since they had used up so many cues and had produced many responses (had many alternate solutions), when the cards were presented again, they had relatively exhausted what was there. So that when they were instructed to change, they shortened and wrote different stories.

Unfortunately, the other cards were not analyzed. But there is the possibility that the rigid Ss, having become more acquainted with the TAT cards would in the end produce as many responses as the nonrigid Ss initially produce. Conversely, the nonrigid Ss, exhausting the cards, would in the end produce as few responses as the rigid Ss initially produce. It seems

that acquaintance with material for rigid Ss enhances their learning, whereas for the nonrigid Ss acquaintance hampers them.

Rigidity was defined in chapter one as an inability to change. Table 5, Table 8, and Table 9 indicate that the rigid Ss did not follow instructions and therefore did not change. These three tables uphold the above mentioned definition of rigidity.

Supplementary Analysis

Part 1. Type III Design for Total Percentage of Change

In terms of percentage of change of total responses the SDI did not differentiate the Ss classified as rigid and nonrigid (SSc). What this analysis indicated was that any 40 Ss could be given the instructions to change and not to change and there would be a difference between them. Table 10 indicates that the Ss followed both instructions (SSr).

The problem of dealing with percentages is that two Ss, each with a different number of responses, may end up having the same percentage of change. Thus, as an indicator of difference between rigid Ss and nonrigid Ss, percentage of change is an unsatisfactory measure.

Part 2. t Ratio for the Type III Design

The t ratios in Table 11 indicated no significant difference between the rigid Ss and nonrigid Ss with respect to percentage of change of total responses. However, Table 11 shows that there is a difference among the groups following

the two sets of instructions. This effect may be due to percentages of change which as shown in Part 1 is an unsatisfactory measure of rigidity.

Part 3. The Word Fluency Test

The Word Fluency Test in Table 12 indicated no significant difference in productivity between the rigid and nonrigid Ss. The rigid Ss can produce as many responses as the nonrigid Ss and therefore word fluency is a controlled variable for both groups in this experiment.

Part 4. Test Retest Reliability

Test retest reliability, utilizing a Pearson product-moment correlation coefficient, was found to be .84. Braen (1960b, p.13) indicates that for his high school population reliability for the SDI was .67. His college sample obtained a reliability coefficient of .86. The sample in the present study obtained a coefficient as high as the college population and the sample of the present research was significantly more consistent than Braen's high school sample. This is indicated in Table 13. As in Braen's (1960b) study, the present research found no difference between high school students who were classified as rigid or nonrigid on the basis of their SDI scores.

CHAPTER V

SUMMARY AND CONCLUSIONS

The term rigidity has been defined in many ways and much experimentation has been done with this concept. One of the few rigidity inventories, the Self Descriptive Inventory (Braen, 1960a, 1960b), was employed in the present study to investigate the ability of such a test to differentiate Ss into categories of rigid or nonrigid. The Thematic Apperception Test was used as an outside criterion of rigidity and a scoring scheme was constructed.

To accomplish this objective the SDI was administered to 334 high school students from which 40 Ss were chosen. The highest 20 scorers on the SDI and the lowest 20 scorers were selected. Five TAT cards 2, 3BM, 4, 6BM, and 7BM were administered in two testing periods to these 40 Ss. On trial one, all 40 Ss wrote stories to the aforementioned cards. On the second trial the two groups were further subdivided, half of the rigid and nonrigid Ss were asked to reproduce their stories; and the other half were asked to change their stories.

The data was subjected to a type III analysis of variance design (Lindquist, 1956) which indicated no significant difference between the rigid Ss and nonrigid Ss who were chosen on the basis of their SDI scores. For the present experiment,

statistical analysis indicated that the SDI did not differentiate between rigid Ss and nonrigid Ss.

In order to explain the obtained result, two tentative hypotheses were examined. The notion of rigidity postulated by Cattell and Tiner (1949) was discussed as an explanation for the results of the present research. Also, Schroder and Rotter (1952) relate rigidity to an inability to learn and their concept was discussed as another possible explanation for the results obtained in the present study.

Statistical analysis showed that the nonrigid Ss produced significantly more responses on the first trial than the rigid Ss. It seems that the number of responses was able to differentiate rigid from nonrigid Ss.

It was shown that the SDI in the experiment conducted by Philip, Fehr, and Smith (1960) was not an indicator of perceptual rigidity. The results of the present study also indicate that the SDI does not measure the same rigidity as the TAT.

APPENDIX A

APPLICATION OF SCORING SCHEME TO TAT STORIES

Trial One - Card Two

Nouns	Verbs	Adj.	Adv.	
farmer	do	best	there	
work	love	funny	together	
people	sound	city		
beans	cultivate	warm		
wife	show			
picture	work			
family	make			
living				
R - 8	R - 7	R - 4	R - 2	TR - 21
C - 1	C - 3	C - 4	C - 1	TC - 9

Trial Two - Card Two

Nouns	Verbs	Adj.	Adv.	
picture	do	beautiful	best	
farmer	enjoy	whole	together	
work	know			
comfort	give			
person	work			
land	cultivate			
beans	help			
wife	make			
way				
living				
family				
R - 11	R - 8	R - 2	R - 2	TR - 23
C - 4	C - 4	C - 2	C - 1	TC - 11

TR - 44
TC - 20
% - 45

R - Responses
C - Changed Responses

APPENDIX B

DESCRIPTION OF UTILIZED TAT CARDS

2. Country scene: in the foreground is a young woman with books in her hand; in the background a man is working in the fields and an older woman is looking on.

3 BM. On the floor against a couch is the huddled form of a boy with his head bowed on his right arm. Beside him on the floor is a revolver.

4. A woman is clutching the shoulders of a man whose face and body are averted as if he were trying to pull away from her.

6 BM. A short elderly woman stands with her back turned to a tall young man. The latter is looking downward with a perplexed expression.

7 BM. A gray-haired man is looking at a younger man who is sullenly staring into space.

BIBLIOGRAPHY

Becker, W.C. Perceptual rigidity as measured by aniseikonic lenses. J. abnorm. soc. Psychol., 1954, 49, 419-422.

Bell, J.E. Projective Techniques. New York: Longman's Green& Co., 1951.

Bellak, L. The Thematic Apperception Test and The Children's Apperception Test in Clinical Use. New York: Grune & Stratton, 1954.

Braen, B.B. Development of a theoretically-based manifest rigidity inventory. Psychol. Reports, 1960a, 6, 75-88.

Braen, B.B. & Wallen, N.E. Measurement of rigidity in high school students. Psychol. Reports, 1960b, 7, 11-17.

Brengelmann, H. Expressive movements and abnormal behavior in H.J. Eysenck (Ed.) Handbook of Abnormal Psychology. New York: Basic Books, Inc., Publishers, 1961.

Brown, R.W. A determinant of the relationship between rigidity and authoritarianism. J. abnorm. soc. Psychol., 1953, 48, 469-476.

Carp, E.M. Psychological constriction on several projective tests. J. consult. Psychol., 1950, 14, 268-275.

Cattell, R.B. The riddle of perseveration: I. Creative effort and disposition rigidity. J. Pers., 1946a, 14, 229-238.

Cattell, R.B. The riddle of perseveration : II. Solution in terms of personality structure. J. Pers., 1946b, 14, 239-267.

Cattell, R.B. & Tiner, L.G. The varieties of structural rigidity. J. Pers., 1949, 17, 321-341.

Chown, Elizabeth M. Rigidity - a flexible concept. Psychol. Bull., 1959, 56, 195-223.

Dana, R.H. Clinical diagnosis and objective TAT scoring. J. abnorm. soc. Psychol., 1955, 50, 19-24.

Dana, R.H. An application of objective TAT scoring. J. proj. Tech., 1956, 20, 159-163.

Dana, R.H. Norms for three aspects of TAT behavior. J. gen. Psychol., 1957, 57, 83-89.

Farr, J.N. & Jenkins, J.J. Tables for use with the Flesch Readability Yardstick. J. appl. Psychol., 1949, 33, 275-278.

Farr, J.N., Jenkins, J.J., & Paterson, D.G. Simplification of Flesch Reading Ease Formula. J. appl. Psychol., 1951, 35, 333-337.

Flesch, R. A New Readability Yardstick. J. appl. Psychol., 1948, 32, 221-233.

Flesch, R. Measuring the level of abstraction. J. appl. Psychol., 1950, 34, 384-390.

Flesch, R. Reply to criticism by Jenkins & Jones. J. appl. Psychol., 1951, 35, 62.

Frenkel-Brunswik, Else. Intolerance of ambiguity as an emotional and perceptual personality variable. J. Pers., 1949-50, 18, 108-143.

Goins, A.E. Rigidity-flexibility: toward clarification. Merrill-Palmer Quarterly, 1962, 8, 41-61.

Guilford, J.P. The structure of the intellect. Psychol. Bull., 1956, 53, 267-293.

Hayes, Patricia M., Jenkins, J.J., & Walker, B.J. Reliability of the Flesch Readability Formulas. J. appl. Psychol., 1950, 34, 22-26.

Kounin, J.S. The meaning of rigidity; a reply to Heinz Werner. Psychol. Rev., 1948, 55, 157-166.

Lankes, W. Perseveration. Br. J. Psychol., 1915, 7, 387-419.

Lindquist, E.F. Design and Analysis of Experiments in Psychology and Education. Boston: Houghton Mifflin Company, 1956.

Luchins, A.S. On recent uses of the Einstellung - effect as a test. J. consult. Psychol., 1951, 15, 89-94.

McClelland, D.C. & Liberman, A.M. The effect of need for achievement on recognition of need-related words. J. Pers., 1949, 18, 236-251.

McNemar, Q. Psychological Statistics. (2nd ed.) New York: John Wiley & Sons Inc., 1955.

Murray, H.A. Thematic Apperception Test Manual. Cambridge: Harvard University Press, 1943.

Payne, R.W. Cognitive abnormalities in H.J. Eysenck (Ed.) Handbook of Abnormal Psychology. New York: Basic Books, Inc., Publishers, 1961.

Philip, B.R. An elementary analysis of perceptual rigidity. Canad. J. Psychol., 1958, 12, 115-120.

Philip, B.R., Fehr, R.C., & Smith, A.A. Unpublished research. Assumption University of Windsor, 1960.

Pinard, J.W. Tests of perseveration: I. Their relation to character, Brit. J. Psychol., 1932a, 23, 5-19.

Pinard, J.W. Tests of perseveration II: Their relation to certain psychopathic conditions and to introversion. Br. J. Psychol., 1932b, 23, 114-126.

Rosenzweig, S. & Fleming, Edith E. Apperceptive norms for the Thematic Apperception Test II: An empirical investigation, J. Pers., 1949, 17, 483-503.

Sanford, F.H. Speech and personality. Psychol. Bull., 1942, 39, 811-845.

Scheier, I.H. & Ferguson, G.A. Further factorial studies of rigidity. Canad. J. Psychol., 1952, 6, 18-30.

Schroder, H.M. & Rotter, J.B. Rigidity as learned behavior. J. exp. Psychol., 1952, 43, 141-150.

Shatin, L. The constriction-dilation dimension in the Rorschach and the TAT. J. clin. Psychol., 1958, 14, 150-154.

Thurstone, L.L. & Thurstone, Thelma Gwinn. Examiner manual for the SRA Primary Mental Abilities. Illinois: Science Research Associates, Inc., 1949.

Tomkins, S.S. The Thematic Apperception Test. New York: Grune & Stratton, 1952.

Wesley, Elizabeth L. Perseverative function in a concept-formation task as a function of manifest anxiety and rigidity. J. abnorm. soc. Psychol., 1953, 48, 129-134.

Yates, A. Abnormalities of psychomotor functions in H.J. Eysenck (Ed.) Handbook of Experimental Psychology. New York: Basic Books, Inc., Publishers, 1961.

Zatzkis, J. The effect of need for achievement on linguistic behavior. Unpublished M.A. Thesis, Wesleyan University, 1949.

Zelen, S.L. & Levitt, E.E. Notes on the Wesley Rigidity Scale: The Development of a short form. J. abnorm. soc. Psychol., 1954, 49, 472-473.

VITA AUCTORIS

1939	Born in Hamilton, Ontario to Donald and Mary Chernets.
1945-58	Educated at St. Mary's and St. Ann's Schools, Hamilton; Cathedral Boys' High School, Hamilton.
1958	Enrolled at Assumption University of Windsor as a full-time student.
1962	Received Honours B.A. from Assumption University of Windsor. Registered as a full-time graduate student at Assumption University of Windsor.